

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 42 324.gi.nb	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2004/013104	International filing date (day/month/year) 18.11.2004	Priority date (day/month/year) 16.12.2003	
International Patent Classification (IPC) or national classification and IPC B21B31/07			
Applicant SMS DEMAG AG			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>1</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/013104

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

 - international search (Rule 12.3 and 23.1(b))
 - publication of the international application (Rule 12.4)
 - international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished

the description:

pages 1-5 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

the claims:

nos. 2-9 _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19 06.05.2005 with letter of 04.05.2005

nos.* 1 _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

the drawings:

sheets 1/1 _____ as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. The amendments have resulted in the cancellation of:

the description, pages _____

the claims, nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to sequence listing (*specify*): _____
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____

the claims, nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/013104

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-9	YES
	Claims	1-2	NO
Inventive step (IS)	Claims	4-9	YES
	Claims	1-3	NO
Industrial applicability (IA)	Claims	1-9	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. This report makes reference to the following documents:

D1: US 4 341 426 A (CLAPP ET AL), 27 July 1982 (1982-07-27)

D2: EP 0 425 072 A (THE TIMKEN COMPANY), 2 May 1991 (1991-05-02)

2. **INDEPENDENT CLAIM 1**

2.1 The present application does not meet the requirements of PCT Article 33(1) because the subject matter of **claim 1** is not novel (PCT Article 33(2)).

Document **D2** discloses:

a process for pretensioning by means of hydraulic pressure (88, 90) a conical roller bearing B secured to a mill roll (2), in particular a support roll, arranged with a conical seat on a tapered roller pin (4) by means of chocks C in a roll stand, the pressure applied during the

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milling operation being applied to the inner bearing ring (32), roller (36) and outer bearing ring (34), which are radially clamped against the mill roll (2).

3. **DEPENDENT CLAIMS 2, 3:**

Claims 2 and 3 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty and inventive step requirements:

3.1 **Claim 2:**

D2 (column 8, lines 23-27) discloses that the conical roller bearing is clamped with a pre-set hydraulic pressure.

3.2 **Claim 3:**

The additional features of this claim have no additional or unforeseeable technical effect in comparison with **D1 or D2**. Document **D2** (column 7, lines 50-54) discloses the hydraulic pressure regulation.

4. **INDEPENDENT CLAIM 4:**

4.1 Document **D2** is regarded as the prior art closest to the subject matter of **claim 4**.

The subject matter of independent **claim 4** differs from **D2** in that the pressure-applying system is supported on the mill roll by means of an axial

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bearing provided on a mill roll end pin.

The subject matter of **claim 4** is therefore novel (PCT Article 33(2)).

4.2 The solution to this problem, as proposed in **claim 4** of the present application, involves an inventive step (PCT Article 33(3)) for the following reasons:

The additional features of **claim 4** make it possible to dispense with tie rods while assuring a vibration-free running of the bearing in operation.

The present invention can be considered to address the problem of reinforcing the construction known from **D2** while making a vibration-free bearing possible.

This problem is solved in that the bearing is pretensioned, according to the characterising part of **claim 4**, by means of a ring-shaped pressure-applying system supported on an axial bearing provided on the mill roll end pin.

D2 discloses only the pretensioning of a conical roller bearing by means of tie rods or cylinders which are supported in relation to a plate connected to the frame, and pretension the chock, together with the bearing, against the mill roll.

D2 does not describe or suggest a bearing

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supported on the mill roll end pin by means of an axial bearing.

5. **Claims 5–9** are dependent on **claim 4** and thus also meet the PCT novelty and inventive step requirements.
6. The subject matter of **claims 1–9** is unquestionably industrially applicable (PCT Article 33(4)).